Jules' Workshop

Standard

Unit 1 - Answers

The symbol for Current is 'I' because, it denotes the 'intensity' electron flow and is measured in A.

The symbol for Voltage is 'E for Electromotive Force (EMF) or 'V' for voltage and measured in V.

The symbol for Resistance is 'R' and is measured in Ohms.

A. Describe how voltage is measured.
   Voltage is measured across two points.
B. Describe how current is measured.
   Current flow must be measured in the circuit.

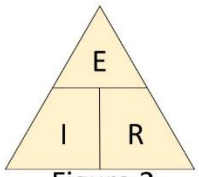

Figure 2

E = I x R I = E / R R = E / I

Complete the table below.

Voltage (E)	Current (I)	Resistance (R)
12 V	2 A	**6Ω**
120 V	**20 µA**	6 MΩ
10 V	500 mA	20 Ω
240 V	6 A	40 Ω
60 V	**60 mA**	1 KΩ
90 V	3.3 A	**27.27 Ω**
24 V	**4 µA**	6 MΩ
6 V	1000 A	**6 mΩ**
9 V	3 mA	3 KΩ
240 V	**240 MA**	1 µΩ
12 V	12 A	**1 Ω**
12 V	**2 A**	6 Ω
3 mV	6 µA	**500 Ω**
10 MV	**0.5 A**	20 MΩ
24 V	2 mA	**12 kΩ**
12 V	**.024 µA**	500 MΩ

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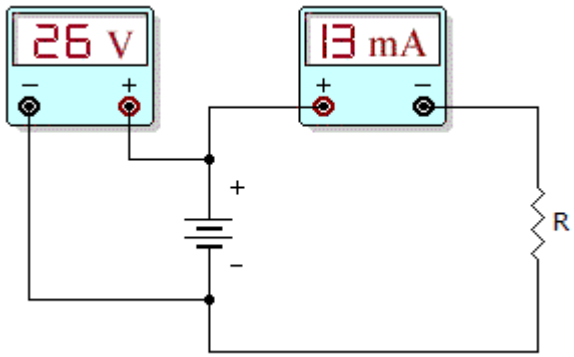
440 mV	0.4 mA	110 Ω
53.75 V	5 A	10.75 Ω
12 kV	**480 µA**	25 MΩ
240 V	0.75 mA	**320 kΩ**
300 kV	300 A	1 kΩ

1. If doubling the voltage across a resistor doubles the current through the resistor, then
   A. the resistor value decreased.
   B. <u>the resistor value did not change.</u>
   C. the resistor value incresed.
   D. It is imposible to calculate.

2. If the voltage is increased five times across a fixed value of resistence, what does the current do**?**
   A. **<u>The current increases by a factor of five</u>.**
   B. The current decreases by a factor of five.
   C. Current stays the same.
   D. It is imposible to calculate

3. If the resistance in a circuit increases and the voltage is constant, the current will
   A. increase
   B. **<u>decrease</u>**
   C. stay the same
   D. Not enough information



4. What is the resistor value in the given circuit?

IMPORTANT: Observe the difference in measuring voltage and current. Voltage is measured across the terminals, but current is measured in the circuit.

   A. 200 Ohms
   B. 1k Ohms
   C. <u>2k Ohms</u>

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D. 4k Ohms

5. If the voltage doubles across a fixed resistance

A.The current is halved

B. The resistance doubles

C.The current is unchanged

D.**The current doubles**

6. Ohm's law describes the mathematical relationship between

A. ohms, kilohms, and megohms

B. resistor size and resistor value

C. **resistance, voltage, and current**

D. none of the above

7. If current through a fixed resistance is halved

A. the resistance is halved

B. **the voltage is halved**

C. the voltage doubles

D. The current cannot change

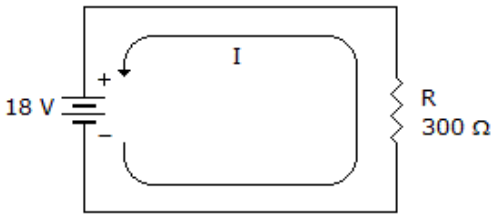
8. If the voltage in the circuit to the right was cut in half, what would the current equal?

A. 10 mA

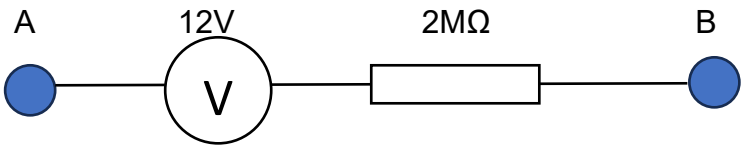
B**. 30 mA**

C. 60 mA

D. 90 mA



9. What current is flowing in the circuit?



A. 6A
B. 6 mA
C. 6 µA
D. None

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10 What current is flowing in the circuit if we connect a conductor between A and B?

A. 6A
B. 6 mA
C. <u>6 µA</u>
D. None

11. A 10 V battery is rated at 20 amp-hours and is discharging through a 150 Ω load. How long will the battery last?

A. 3 days
B. 3 hours
C. 30 hours
D. **<u>300 hours</u>**

12. Describe the difference between a primary and secondary cell.
Non chargable and chargable.

13. What is meant by the terms direct current (DC) and alternating current (AC)
DC the electrons flow in only one direction.
AC the electrons flow back and forth.

14. Why cant you get an electric shock if you touch a high voltage wire with a piece of plastic?
Plastic is an insulator and does not allow the flow of electrons.

15. A 12 V battery can power a series of lights for 20 hours. The lights are which are measured at 24 Ω. What size battery is needed for this task?

A. 159 amp-hour
B. 100 amp-hour
C. <u>10 amp-hour</u>
D. Not enough information

16. Describe the difference between conventional current flow and electon flow.

CCF positive to neg
EF negative to positive.

17 What is the internal resistance and terminal voltage of a power source?

Internal resistance is the resistance within a battery, or other voltage sources, that causes a drop in the source voltage when there is a current. A cell can be thought of as a source of e.m.f. with a resistor connected in series. When current flows through the cell a voltage develops across the internal resistance

Terminal voltage: When current is drawn from a cell, the potential difference between the electrodes of the cell is called its terminal voltage.

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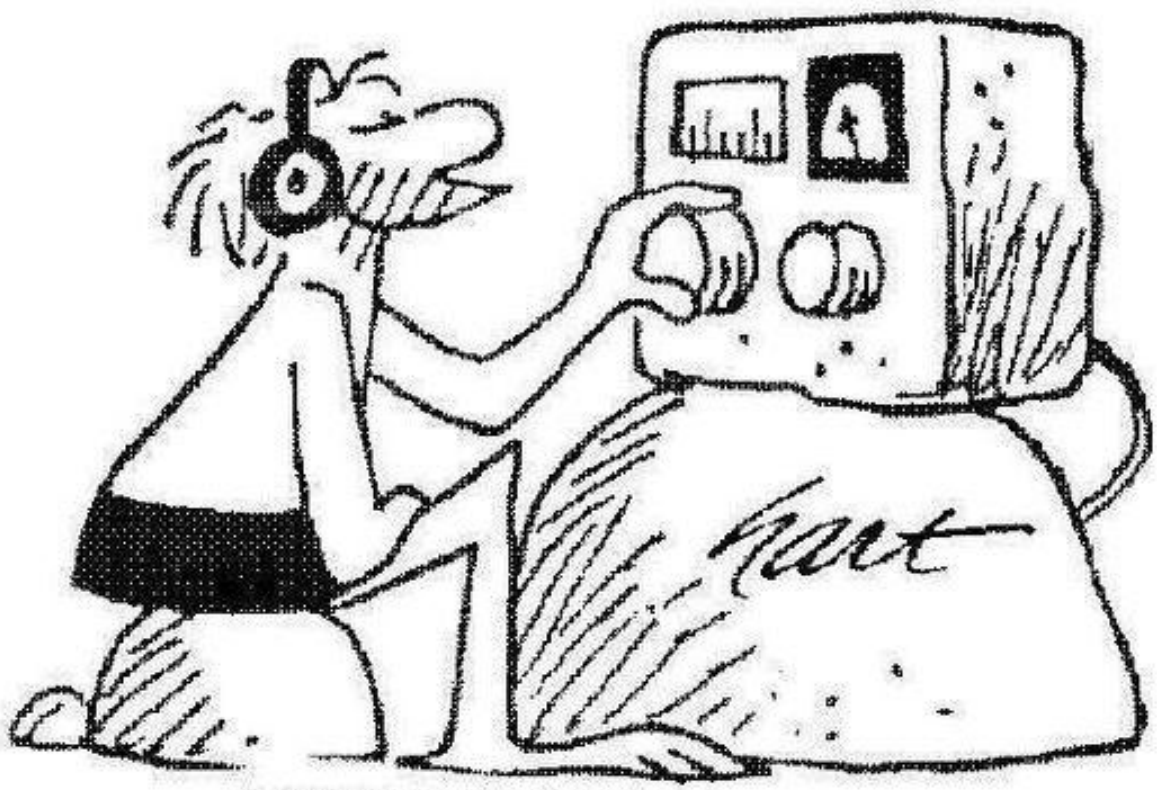
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